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of the shock from charged glass is in proportion to the quantity of surface of the glass coated ; so that my shocks from those large jars must have been much greater than any, that could be received from a phial held in the hand.

I am, with great respect,

S I R,

London,
Dec. 21, 1757.

Your most obedient Servant,

R. Franklin.

LX. *Observations on the late Comet in September and October 1757 ; made at the Hague by Mr. D. Klinkenberg : In a Letter to the Rev. James Bradley, D. D. Astronomer Royal, and F. R. S, and Member of the Royal Academy of Sciences at Paris. Translated from the Low Dutch.*

S I R,

Read Jan. 12, 1758. **I** Hope you will be pleased to excuse the liberty, which I take, of troubling you with my observations on the comet, which made its appearance here, and in other parts of Europe, in the months of September and October last ; and which, according to the news-papers, was first observed the 11th September by Mr. Gartner, at Dorlkeurtz near Dresden ; then by me, on the 16th

of the said Month, here in the Hague ; and afterwards in different places. As I find, that you have observed the comet, I doubt not but that you have done it in the most accurate manner ; and my great love for this science induces me to beg, that I may have the happiness of knowing some of your observations. My good friend Mr. Struyk at Amsterdam wrote me some time ago, that he intended to ask the same favour of you ; but I have not since heard any further from him. I observed this comet from Septemb. 16th in the morning, until Octob. the 11th in the morning ; and found its situations, according to my method, as follows :

| | Longit. | Latit. |
|--|----------|----------------|
| 1757. | | |
| Sept. 16. at 4 h. ante mer. The comet in | 20° 15' | 10° 10' North. |
| 17 — 3 | 20 14 7 | 9 38 |
| 18 — 3 $\frac{3}{4}$ | 20 18 10 | 8 57 |
| 19 — 4 | 20 22 1 | 8 17 |
| 22 — 2 $\frac{3}{4}$ | 21 3 46 | 6 15 |
| 23 — 4 | 21 7 36 | 5 24 |
| 25 — 4 $\frac{1}{4}$ | 21 14 50 | 4 6 |
| 28 — 4 | 21 24 22 | 1 41 |
| Oct. 1 — 4 $\frac{3}{4}$ | 22 2 46 | 0 12 South. |
| 4 — 4 $\frac{1}{2}$ | 22 9 45 | 1 30 |
| 9 — 4 $\frac{1}{2}$ | 22 20 20 | 2 40 |
| 11 — 5 | 22 24 46 | 3 9 |

But the two last observations will, in my opinion, differ the most ; because, when I made them, I was in some doubt about the adjustment of my instruments ; and the comet was then far advanced into the morning rays. I have, since the month of February last to the end of May, made sundry observations on fixed stars, with a telescope of 16 inches, made by Mr. Short ; and with a pendulum clock, made after the manner of Mr. Graham, by Mr. Vryhthoff of this

this place. In the months of February and March, by a medium of eight observations, I found, that by the clock, the star Rigel, in every daily revolution, passed 4 min. $2\frac{4}{9}$ seconds of time earlier, in the telescope ; and in the latter end of May I found, by six observations, (the clock not in the least changed or altered) on the star Spica Virginis, that that star, in every revolution, passed 4 min. $5\frac{1}{23}$ sec. earlier, in the same telescope ; which intervals differ pretty nearly $2\frac{3}{7}$ seconds of time from one another. Whether this difference arises from any defect in the clock, or whether it proceeds from any small difference of velocity of the earth's motion round its axis, I would have been very glad to have endeavoured to find out by farther inquiry, had not the death of Mr. S. Koenig intervened, and I thereby hindered from continuing my observations. The above observations were taken in the observatory of his illustrious Highness the minor Prince of Orange and Nassau, &c. &c. under the direction, and with the approbation of the aforesaid Mr. Koenig. After the death of that gentleman, I petitioned her Royal Highness the Princess Governess of these Provinces, &c. that I might have leave to continue my astronomical observations ; but as yet I have not been able to obtain her Royal Highness's permission : otherwise I would have observed this last comet with more exactness. Had I been able to pursue the above-mentioned observations, I would, for the greater certainty in regard to the pendulum, have made use of a farther precaution. By means of a stove, with the help of a thermometer, I would have endeavoured to have kept the room (in which the clock stood) in the winter, and

at all times, in the same degree of heat it had at the time I made the observations in the summer. I would also have daily observed and noted the moon's place, at the time of the observations. Tho' this is but a slight observation of mine ; yet I make no doubt, but that in case, by the different distances of the earth from the sun, and the different distances and situations of the moon with respect to the earth, and the respective effects produced by these causes, any inequality arises in the velocity of the diurnal motion of the earth on its axis, you (who have made the most sublime observations on the aberration of the fixed stars, and more than any mortal ever did before) must have discovered, and are well acquainted, with the same.

As my above-mentioned observations on the comet appeared too incorrect to undertake a calculation for the ascertaining of its path from the theory, I contented myself with effecting it by a construction. By this means I found, on a figure, whose globular or spherical diameter was $13 \frac{1}{2}$ Rhineland inches, as follows :

That the comet was in its perihelion the 21st of October, at two of the clock in the afternoon : the place of the perihelion 3 degrees in Leo. The comet's distance in the perihelion from the sun was about 34 parts, whereof 100 make the mean distance between the sun and the earth. The inclination of the comet's orbit with the ecliptic 13 degrees ; and the southern latitude of the perihelion also 13 degrees : the ascending or north node $84\frac{1}{3}$ degrees in Scorpio ; and the comet's motion direct, or according to the order of the signs of the zodiac. On this supposition

tion I have, for some of the times of observations, estimated the apparent places of the comet, and found them as follows :

| | <i>Long.</i> | <i>Latit.</i> |
|---|---------------------------|-------------------|
| Sept. 18, at 3 $\frac{3}{4}$ ante merid. In | $\text{S } 18\frac{1}{2}$ | and 9 deg. North. |
| 19 — 4 | — | $8\frac{3}{4}$ |
| 22 — 2 $\frac{3}{4}$ | — | $6\frac{1}{4}$ |
| 23 — 4 | — | $5\frac{1}{2}$ |
| 25 — 4 $\frac{1}{4}$ | — | 4 |
| 28 — 4 | — | $1\frac{1}{2}$ |
| Oct. 4 — 4 $\frac{1}{2}$ | — | South. |
| 9 — 4 $\frac{3}{4}$ | — | $3\frac{2}{3}$ |
| 11 — 5 | — | $3\frac{1}{3}$ |

The observations, which I have taken, to ground the measurement on, are those of the 16th and 23d of September, and of the 1st of October. It appears very evident, not only from this rough calculation, but every other circumstance of this comet, that it is not the same with that in the year 1682: which, on certain accounts, is very desirable to be known; for both here, and in other parts of the Netherlands, there have been some people, who have published mere conjectures; and have ventured (very minutely and exactly, as they pretended) about the time that this comet first made its appearance, to predict the return of the comet of the year 1682. But by the above, the weakness of their pretensions is very evident to all the world: whereas, if this had proved to be the expected comet, they would have assumed to themselves much undue praise, and have pretended to knowledge even superior to the every-where much celebrated Newton and Halley.

It appears also probable to me, that this comet is none of those already calculated, or brought upon a list, by Messieurs Halley and Struyk. It is somewhat remarkable,

remarkable, that the line of the nodes is almost at right angles with the long axis of the ellipsis; which corresponds nearly with the comets of the years 1580, 1683, and 1686: but those had their perihelions northward of the ecliptic; whereas the perihelion of the last, which we have lately seen, was to the southward of the ecliptic.

I have the honour to subscribe myself, with the most perfect esteem for you, and your sublime studies, very respectfully,

S I R,

Your very humble and obedient Servant,

Hague, 13th Dec,
1757.

D. Klinkenberg.

LXI. Remarks on the different Temperature of the Air at Edystone, from that observed at Plymouth, between the 7th and 14th of July 1757. By Mr. John Smeaton, F. R. S.

S I R,

Read Jan. 12, 1758.

ON the reading of Dr. Huxham's letter at the last meeting, some observations occurred to me, concerning the different temperature of the air, which I had observed at the Edystone, from what had been observed by the Doctor at Plymouth, between the 7th and 14th of July